DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo code (CA725)

Current Human Exposures Under Control

Facility Name:	The Ensign Bickford Company, Louviers Colorado Facility
Facility Address:	7800 North Moore Road, Louviers, Colorado 80202-2466
Facility EPA ID #:	COD075754663

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

X If yes - check here and continue with #2 below.

____ If no - re-evaluate existing data, or

____ if data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			RFI Data: Explosives, VOCs (note1)
Air (indoors)[2]		X		RFI Data & CC/RA Report: Incomplete Pathway (note 2)
Surface Soil (e.g., <2 ft)	X			RFI Data: PAHs (note 3)
Surface Water		X		CC/RA Report: Incomplete Pathway (note 4)
Sediment		X		CC/RA Report: Incomplete Pathway (note 5)
Subsurf. Soil (e.g., >2 ft)		X		RFI Data (note 6)
Air (outdoors)		X		RFI Data (note 7)

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_X_ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

1. RFI Hydrologic Data and Recommendations for Further Investigation (1/8/03):
Phase 1 RFI ground water data (Cahrter Oak, 2003a) shows the presence of 1 VOC compound (1,1-DCE) at a concentration (7.7 ug/L) slightly in excess of the Colorado MCL (7.0 ug/L). 1,1,1-TCA is present in ground water at a concentration (0.39 ug/L), well below the Colorado MCL (200 ug/L). Nitrate is present in one well at 17 mg/L, which is above the 10 mg/L Colorado MCL The organic compounds chloroform, acetone, trichlorofluoromethane, RDX, HMX, and 2,6-diamino-4-nitrotoluene were also detected but do not have promulgated standards. Metals were analyzed and detected in ground water but are below promulgated standards and may well reflect background concentrations.
2. Constituents of potential concern (COPCs) are not known to be present in soil or ground water below existing buildings.
3. The compound benzo(a)pyrene was detected in one RFI soil sample at a concentration of 16 mg/kg, which exceeds the 2.9 mg/kg site-specific risk-based screening level for the "industrial worker" scenario (2.9 mg/kg). Other organic and inorganic COPCs were also detected in surface soil but do not exceed site-specific RBSLs (Charter Oak, 2003c)
(4, 5) There is no surface water or sediment at or near the facility. The CC/RA report (Charter Oak, 2000) documented that the surface water and sediment paths are incomplete. Current data have not indicated that surface water farther down-gradient of the facility has been impacted.
6. COPCs were analyzed and detected in subsurface soils, but do not exceed site-specific industrial RBSLs.
7. Inhalation exposures were incorporated in the calculations of the site-specific RBSLs. Since only benzo(a)pyrene exceeds site-specific RBSLs (note 3), it is the only compound that requires further consideration. However, the inhalation route comprises a small fraction of total exposure for this compound and outdoor air is not adversely affected.

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[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No	No	No	No	No
~~Air (indoors)~~	___	___	___				
Soil (surface, e.g., <2 ft)	No	No	No	No	No	No	No
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
~~Soil (subsurface e.g., >2 ft)~~				___			___
~~Air (outdoors)~~	___	___	___	___	___		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

X If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):
Groundwater: Groundwater impacts are currently known to exist only in the uppermost shallow ground water. Such groundwater is not currently extracted for use and is present in insufficient quantity to be extracted for use.
Surface soil: Per the definition of "contaminated" in the previous section, only benzo(a)pyrene is known to be present in excess of appropriately protective risk-based "levels" (site-specific RBSLs). Risk analysis (Charter Oak, 2003b, c) demonstrated that COPCs are below levels protective of receptors other than the site workers. Currently, only authorized, HAZWOPER-trained investigation/remediation workers have access to the area containing benzo(a)pyrene in excess of industrial RBSLs.

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

X If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Three levels of fencing currently restrict access to the area containing benzo(a)pyrene in excess of industrial RBSL. Signage also indicates that access to the area is restricted to authorized personnel. Through limited exposure frequency and duration, and trough the use of personal protective equipment (PPE) and hygiene procedures contained in the RFI Health and Safety Plan (HASP), investigative and remediation workers will not be significantly exposed.

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

X If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

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6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the _____ _____facility, EPA ID # _____, located at _____ under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - "Current Human Exposures" are NOT "Under Control."

_____ IN - More information is needed to make a determination.

Completed by	(signature)	(signature copy on file)	Date July 17, 2003
	(print)	Linda Bowling	
	(title)	Environmental Engineer	
Supervisor	(signature)	(signature copy on file)	Date July 17, 2003
	(print)	Christine Lehnertz	
	(title)	Manager, Corrective Action Unit	
	(EPA Region or State)	EPA Region 8	

Locations where References may be found:

999 18th Street
Suite 300, 8P-HW
Denver, CO 80202

3rd Floor
Solid and Hazardous Waste Program Records Center

Contact telephone and e-mail numbers

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.